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AUTHOR Hawley, John B.
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ABSTRACT

This paper describes the Schumpeterian schema of capitalist business cycles. The creator of the model, Joseph A. Schumpeter (1883-1950), was a Czech-born and Viennese-educated theoretical economist who emigrated to the United States in the 1930s and taught at Harvard University for 18 years. He is particularly remembered in economic circles for discussions of historical data in the context of his theory. Schumpeter defined competitive capitalism as that form of private-property economy in which innovations had been carried out by means of borrowed money. His model is based on a three-step process. First, he identified a primary business cycle consisting of prosperity and recession (called the First Approximation), by introducing entrepreneurial innovation into a situation of general equilibrium; second, he identified a four-phase cycle consisting of prosperity, recession, depression, and recovery (the Second Approximation); finally, he concluded that several cycles of different lengths emerged from the innovation process and operated simultaneously. In Schumpeter's view, competitive capitalism was an economic system which was neither pure nor perfect and which experienced fluctuations, upswings, contractions, and booms and busts. Many factors were responsible for these cycles, including wars, social unrest, and social movements such as Prohibition (external factors); changes in taste and in the quantity and quality of production forces, and changes in the methods of supplying commodities (internal factors). Tabular data are presented on the more than 50 major and minor cyclical industries which Schumpeter analyzed to provide evidence for his theory. The document concludes with a bibliography of Schumpeter's works and of tables relating to business cycles during various time periods. (DB)

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The Schumpeterian Model of the Cyclical Process in the Evolution of American Capitalism, 1786-1939

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by

John B. Hawley
Professor of Higher Education
Southern Illinois University at Carbondale

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The Schumpeterian Model of the Cyclical Process in the Evolution of American Capitalism, 1786-1939[1]

Joseph A. Schumpeter (1883-1950) defined competitive capitalism as that form of private-property economy in which innovations had been carried out by means of borrowed money. Early in his career he envisioned an historical capitalist process and published his first view of it in 1911. After 1926 some of his articles shed further light on various aspects of his system. The model took final form in his 1939 two-volume Business Cycles, subtitled A Theoretical, Historical, and Statistical Analysis of the Capitalist Process.[2] This chapter will describe the essentials of the Schumpeterian schema. Citations will be from Fels' 1964 one-volume abridgement of Business Cycles.

Schumpeter explained his system in three steps. He obtained a two-phase primary business cycle (prosperity and recession) by introducing an innovation into a situation of general equilibrium which he called a First Approximation,

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[1]John B. Hawley, Professor of Higher Education, Southern Illinois University, Carbondale, Ill., January, 1978.

[2]Richard V. Clemence and Francis S. Doody, The Schumpeterian System (Cambridge, MA.: Addison-Wesley Press, Inc., 1950), pp. 1 and 2. Titles of twenty-eight books and articles by Schumpeter are listed in the bibliography, pp. 110 and 111. They are also listed here in the Appendix.

then he identified the existence of a Secondary Wave which provided additional data to the economic system and which yielded a four-phase cycle approximating reality (prosperity, recession, depression, and recovery); he termed this the Second Approximation ; finally, he recognized the fact that several cycles of different lengths emerged from the innovation process and operated simultaneously.[1]

The Capitalist Economic System

In Schumpeter's view, competitive capitalism was an economic system which was neither pure nor perfect.[2] Its economic machine had come about both by design and by accident. Experience had revealed "a distorted capitalism . . . covered with the scars of past injuries inflicted on its organism."[3] The capitalism of Schumpeter's day was not the capitalism of earlier times, although the residue of the past was much in evidence. Capitalism had been the result of an evolutionary process in which the economic organism had been constantly changing. The system had always been "in full transition toward something else."[4] What was true

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[1]Ibid., pp. 7 and 8.

[2]Joseph A. Schumpeter, Business Cycles: A Theoretical, Historical, and Statistical Analysis of the Capitalist Process (New York: McGraw-Hill, 1939), p. 5.

[3]Ibid., pp. 6 and 7.

[4]Ibid., p. 5.

for the system was also true for the business firm and the industrial corporation. Their essentials had been formed by political forces.[1] Some industries would not have existed except for protection, subsidies, and other political stimulants. Other firms were born to die.[2] Competition between and among businesses had also been neither perfect nor pure. Capitalism, like any system, had striven to reproduce itself at a constant pace. Economic activity had thus tended to be repetitive as the system had striven for balance between output and income and the flow of the ideal natural economic process had been thought of as circular. However, since the system had never been either perfect nor pure, a state of balance had never been reached, but, rather, neighborhoods of equilibrium had been achieved. Its balance had been constantly and incessantly disturbed. Consequently, the system had experienced fluctuations, upswings and downgrades, expansions and contractions, booms and busts.[3] Schumpeter's analysis revealed that these fluctuations had occurred regularly as a four-phase cycle: prosperity, recession, depression, and recovery. He noted the existence of several cycles of varying lengths which had operated simultaneously. However, he settled on three for

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[1]Ibid., p. 7.

[2]Ibid., p. 69.

[3]Ibid., pp. 1-7.

the purpose of his analysis:[1] (1) a long term fluctuation fifty to sixty years in length, the Kondratieff,[2] (2) an intermediate length wave, the Juglar,[3] which was from eight to ten years long, and (3) the Kitchin, a short undulation of forty months.[4]

Two types of occurrences had determined any given business situation. Events which worked from within the

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[1]Ibid., p. 144.

[2]Named after the Russian agricultural economist, Nicholas D. Kondratieff (1892-193?), professor at the Agricultural Academy and director of its Conjuncture (Business Research) Institute, Moscow, from September, 1920. He discovered the long wave about 1919 and published on the subject beginning 1922.

A. I. Solzhenitsyn wrote in The Gulag Archipelago (New York: Harper and Row, 1973) that in 1931 Kondratieff was accused by the USSR of having been a member of a fictitious Working Peasants Party which was supposed to have been "an enormous organized underground force among the rural intelligentsia . . . preparing to overthrow the dictatorship of the proletariate." (Ibid., p. 49) Kondratieff was arrested, tried, condemned, and "sentenced to solitary confinement, became mentally ill there and died." (Ibid., p. 50.)

[3]Named after French physician and economist Clement Juglar (1819-1905) who was one of the first to explore periodic economic cycles (Des Crises Comerciales et de Leur Retour Periodique en France, en Angleterre, et Aux Etats Unis, 1860).

[4]Named after Joseph Kitchin (18__-19__), an English economist (Cycles and Trends in Economic Factors, 1923). Schumpeter changed his position somewhat in 1949 when he said that the forty-month cycle might be explained by an inventory phenomenon rather than by innovations. ("The Historical Approach to the Analysis of Business Cycles," Essays on Economic Topics by J. A. Schumpeter, edited by R. V. Clemence (Port Washington, N. Y.: Kennikat Press, 1951), p. 314.

economic system Schumpeter called internal phenomena, whereas incidents which worked on the economic machine from without were termed external factors.[1]

External Factors

Of those events which had worked on the economic organism from outside the economic system, there were also two classes: (1) those which were directly related to the work of the economic system, and (2) those which were produced by other social agencies acting on the economic machine. Wars, dangers of wars, revolutions, social unrest, and social movements such as Prohibition, were placed in the second category, since they were produced by other social agencies which acted on the economy. Those external factors which were directly related to the work of the economic system, Schumpeter identified as:

Inflation and inflationary impulses
Deflation

Many collective measures taken by the business world itself (which could also be internal factors).
Business fluctuations in other countries.

Variations in the monetary supply of gold.
Chance discoveries of gold.

Politically stimulated governmental expenditures, such as subsidization of industries, e.g., shipbuilding, railroads, and legislation which financed government expenditures.
Changes in federal reserve system practices (which could also be internal factors).

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[1]Schumpeter, Business Cycles, 1964, p. 1.

Changes in institutional rules of the economic game, such as tariff policy changes, taxation system changes, government regulations, social betterment measures.

Changes in social behavior and habits, such as keeping one's liquid resources in form of demand deposits rather than in cash or at home, and contracting collectively rather than individually.

Variations in crops due to natural causes.

Variations in number and age of population.

Migrations over frontiers of other countries.[1]

External factors had produced sequences of phenomema which had often looked like units of the cyclical process. The effects of the external elements he called "external irregularities" as differentiated from the effects of internal factors which were termed "internal irregularities."[2] One example was the financing of wars which occurred during the upswing phases of cycles. When war demand had stopped and budgets were balanced again, most of the surface appearances of recession and depression often appeared, after which came a period which displayed many of the characteristics of a cyclical recovery. Another case was the variation in gold production due to chance discoveries of gold. These simply had altered some of the conditions of entrepreneurial activity. Still another instance was the harvest cycle of crops which were one of

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[1]Migrations within the USA caused by business fluctuations were internal factors.

[2]Schumpeter, Business Cycles, 1964, p. 1.

the special types of cycles which superimposed themselves on the basic cycles. Schumpeter saw these as no more relevant to the general welfare than they were to prosperity or depression.

Schumpeter distinguished between major and minor wars, revolutions, frictions, and disturbances involving military operations. Minor wars, such as the Mexican War of 1847-48, and the Spanish-American War of 1897-98, had occurred during the recovery and prosperity phases of the second Kondratieff. Some of these the business community had not even noticed. Others caused only small ripples. In any case, Schumpeter saw them as having had no major effects on the cyclical mechanism. Even major wars, such as the Civil War and World War I, which occurred during recessionary phases of the Kondratieff, had had very little importance in the cyclical apparatus, barring physical injuries to productive works of which plant and stock were quickly repaired. As long as the capitalist engine had been intact, plant and stock had always been quickly replaced. What mattered most in such cases, according to Schumpeter, had been the impairment of the capitalist will power, motivation, and evolutionary mechanism, rather than the physical loss. These had suffered little in all American wars up to the time of Schumpeter's analysis.[1]

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[1]It would appear to be true also for all subsequent American wars to date.

Internal Factors

Internal elements which had worked from within the economic system Schumpeter called "prime movers" and "carrying mechanisms" of the system. These factors had caused business fluctuations.[1] These were the independent, or predictor, causative variables in the process of the evolution of the economic organism. Three categories of these internal phenomena were identified: (1) changes in taste, (2) changes in the quantity and quality of the factors of production, and (3) changes in the production functions themselves.

Changes in Taste.--All changes in consumers' tastes had been related to and brought about by the actions of producers. Consumer initiatives in changing tastes had been negligible, with two exceptions: (1) leaders of fashion who created new forms and habits of private life, and (2) social movements such as Prohibition.[2]

Changes in Production Factors.--These had been changes in the quantity and distribution of production forces.[3]

Changes in Production Functions.--These had been changes in the methods of supplying commodities.

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[1]Schumpeter, Business Cycles, 1964, pp. 46-62.

[2]Ibid., p. 47.

[3]Ibid., p. 48.

Schumpeter called this third type "innovations." In essence, innovation had meant "doing things differently."[1]

All three types of changes had interacted and mutually conditioned each other. Historic changes in the capitalist economic system had been the result of them all. However, Schumpeter saw innovation as the "outstanding fact" of the capitalist economy.[2] All three change factors had stressed discontinuity in the economic system. Thus, the system had proceeded by successive jerks and starts. At the same time, every change had seemed to be the result of the accumulation of many small influences and events. These had often occurred by such small steps that any exact dating of the change had been difficult, if not meaningless. The decisive step which had brought about a new thing of ultimate practical success had been, in most cases, only the last straw and often relatively insignificant in itself.[3]

Changes in the capitalist economic process which had been brought about by innovations, their effects, and the responses of the economic system to them, he

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[1]Ibid., p. 59.

[2]Ibid., p. 61.

[3]Schumpeter declared that the same was true for social institutions and that what had been technically called revolution could never be understood without referring to the developments which had led up to it. It had occurred at the end of the process rather than at the beginning.

labelled "economic evolution."[1] Such changes had been at the center of practically all the phenomena, difficulties, and problems of economic life in capitalist society. Innovations had produced both prosperities and depressions. Thus, any given industrial development had been part of a continuous process proceeding steadily from roots centuries old, yet at the same time it had involved many discontinuities incident to setting up a new production function, when looked at from the point of view of the individual firm.

Innovation

Innovation was so important to the development of capitalism that Schumpeter delineated a theory of innovation.[2] When the form of a production function had changed, an innovation had occurred. Setting up a new production function was also an innovation. When existing factors of production had been turned to new uses, innovation had appeared. Since innovation was by definition the combining of productive services, innovations had combined these factors in new ways and had carried out new combinations.[3]

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[1]Economic evolution has often been called "progress." Schumpeter, Business Cycles, 1964, p. 61.

[2]Ibid., pp. 62-77.

[3]Ibid., p. 62.

There were two types of innovation, technological and organizational. These included such things as:

> The introduction of new commodities,
> Opening up new sources of supply,
> Opening up new markets,
> Setting up new business organizations and forms of business organizations,
> Improving productive and organizational efficiency (which Schumpeter called "Taylorization of Work"),[1] and
> Technological changes in the production of commodities already in use.[2]

Most innovations had resulted from some conquest in the realm of practical or theoretical knowledge. However, invention had not been synonymous with innovation. Innovation had occurred without any signs of invention. Invention could or could not have induced innovation. Inventions had been relevant only when the commercial possibilities had become industrial realities. The creation of an invention and the setting up of the corresponding production function, or innovation, had been two entirely different things. When the inventor and the innovator had been one and the same person, this had been mere coincidence in that, the volition and motives behind the two processes had been different, requiring different attitudes and methods of work. "Entrepreneur" was the label Schumpeter placed on the innovator. Innovation had been an internal part of the economic process. Invention may or may not have been.[3]

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[1]Taylorization began the era of the efficiency expert which Frederick Winslow Taylor (1856-1915) initiated in 1881.

[2]Schumpeter, Business Cycles, 1964, p. 59.

[3]Ibid., pp. 59-61.

Whenever a given quantity of a product had cost less to produce than the same or smaller quantity had cost, or would have cost before, an innovation had occurred somewhere in the production function.[1] The cost curve for the product had been destroyed and a new one put in its place each time an innovation took place. Innovations had continuously shifted existing cost curves. This had given the impression of the prevalence of decreasing cost as well as overproduction.[2] Firms which had innovated had fought to dominate their markets.[3] In doing so, they had upset the existing industrial structure, causing imbalances, cut-throat competition, and the like.[4]

Major innovations and many minor ones had involved construction of new plant and equipment or the rebuilding of the old. Not every new plant had embodied innovation. However, practically all new plant beyond replacement, and much replacement, had either contained some innovation or had been a response to situations which had been traceable to some innovation.[5]

Every innovation had been embodied in a new firm founded for that purpose. Schumpeter labelled this

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[1]Ibid., p. 63.

[2]Ibid., p. 66.

[3]Ibid., p. 64.

[4]Ibid., p. 66.

[5]Ibid., pp. 68-69.

organization an "enterprise." In fact, this had been one of the decisive influences which had started prosperity phases of business cycles.[1] Most firms had been founded with a definite idea and purpose. When this goal had been fulfilled, the life had gone out of them. Thus, they had become obsolete and had ceased to be new. For that reason, firms had not lasted forever. Many had been failures from the start. Like living organisms, firms had been born which could not have lived. Others had died of what was akin to death by accident or illness. Still others had died of old age, unable to keep pace in innovating. No firm which had operated merely on established or routine lines had remained a source of profit. New production functions had entered the economic system through new firms established for the purpose, while old firms had reacted adaptively to the pressure of competition from the downward shifting cost curve. Those that hadn't adapted declined or went out of business. This is what had happened during periods of disequilibria and downward fluctuations (recessions and depressions). Schumpeter believed that the process of the ceaseless rise and decay of firms and industries had been the central, though much neglected, fact of capitalism.[2]

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[1]However, Schumpeter was less convinced that business and industrial failures had initiated downward movements.

[2]Schumpeter, Business Cycles, 1964, p. 70.

Finally, innovations had always been associated with the rise to leadership of new persons.[1] This had been a fundamental sine qua non of the sociology of industrial society. It explained why innovations did not typically grow out of old businesses unless a new person had taken hold of the old firm, in which case innovation had been possible. It also explained why the insertion of innovations into the economic system had proceeded by competing the old firms out of existence or by enforcing the transformation of the old firms. He had found that great corporations had often been but "shells" within which ever-changing personnel had gone from innovation to innovation.[2]

The most important major innovations Schumpeter labelled the "carrying" mechanisms of the Kondratieff. That is, they had their beginnings and gestation in the downswing and recovery of one Kondratieff cycle and continued to full operation and became the "backbone" and a major contributor to the following Kondratieff prosperity. For example, the introduction of power machinery had been initiated before 1790, the start of the first Kondratieff. Following its gestation period, it carried the first

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[1] "New men" was the term Schumpeter used inasmuch as women innovators had been few and far between in his experience or to his knowledge.

[2] Schumpeter, Business Cycles, 1964, p. 70.

Kondratieff and continued to be influential in the second. Similarly, "railroadization" had "ignited" and gestated during the downturn and revival of the first Kondratieff, became the backbone of the second, and continued strongly to influence the third.[1]

A number of characteristics of innovations were noted.[2]

> Innovations had not been evenly distributed over the entire economic system at random. Nor had they been carried into effect simultaneously as a matter of course by all firms or by all firms beyond a certain size. Rather, they had tended to concentrate in certain sectors and their surroundings. In fact, in each cycle it had been possible to locate the ignition of the process of innovation and to identify it with certain industries, and, within these, to recognize certain firms, from which the disturbances spread.
>
> Major innovations had not been evenly distributed in time. Rather, they tended to throng, or cluster. This agglomeration occurred because at first some firms and then most had followed in the wake of successful innovation.
>
> Major innovations had not been isolated events. Many of them had directly affected a wide variety of industries. Such had been the steam engine, the railroad, and electricity.
>
> There had been four steps in the innovating process: ignition, gestation, operation, and harvest.

Innovation had created imbalances within the economic system which had neither been currently nor continuously

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[1] However, by the fourth, it had become a tired "old" industry, in obvious decline.

[2] Schumpeter, Business Cycles, 1964, pp. 75-76.

absorbed. Its disturbances had disrupted the existing system and forced adaptation on it. These disequilibria had been noted in both Kondratieff and Juglar downturns. They had been absorbed only by a distinct and painful process, because some firms had carried out innovations and then acted along new cost curves, while other firms had merely adapted themselves, in many cases, by dying.

Although competition and equilibrium had been imperfect from the beginning of capitalism, economic evolution which had been caused by innovation had been the most powerful influence in creating such imperfections. Independent of the cyclical process, Schumpeter believed that imperfection of both competition and equilibrium, as well as external factors, may have accounted for the presence of unemployed resources, labor in particular. Full employment had ceased to be a property of states of equilibrium and, paradoxically, had indicated disequilibrium.

Important innovations had implied a big step and a big change. In other cases, there had been induced changes which became the improvements which had appeared in the process of adaptation by existing firms. Industrial change had never been harmonious with all elements of the system advancing together. Some industries and firms moved on; others stayed behind. Economic evolution had proceeded by twitches and plunges. Progress had not been naturally smooth

and attuned. Rough passage and discord were the norm. By its nature economic evolution had been lopsided, discontinuous and strife-ridden. The factors of economic evolution had worked in ways that were inherently disharmonious. Over the long haul, "The history of capitalism is studded with violent bursts and catastrophies . . . Economic progress is more like a series of explosions than a gently though incessant transformation."[1] The market and the flow of spending in neighborhoods of equilibrium had tended to be stationary and stable. When disturbances caused by innovations had changed the circular flow of the market equilibrium, economic growth and development had occurred.

In fact, innovations had not only been the most immediate source of gains, but also indirectly had produced most of the situations from which windfall gains and losses had arisen and in which speculative operations had acquired significant scope. The bulk of private fortunes in capitalist society had been directly or indirectly the result of the process of which innovation had been the "prime mover."[2] Speculative maneuvers had been responsible for some. Unearned increment reaped by owners of natural resources accounted for others. Saving, consistently carried on through generations, could not have been nearly so successful

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[1]Ibid., p. 77.

[2]Ibid., p. 80.

as it had been, if there had been no surpluses which had resulted from innovation. But the position of the typical industrial, commercial, or financial family had directly originated in some act of innovation.

Entrepreneurs and Entrepreneurial Activity

The individuals who organized and carried out innovations Schumpeter called entrepreneurs. Schumpeter distinguished between the entrepreneur and the mere head or manager of a firm, although both functions had often coincided in one and the same person. The function of introducing a new process of production had not been the same as the process of deciding how much raw goods to buy for one's process of production. No one had been an entrepreneur all the time and no one had been only an entrepreneur.[1]

Entrepreneurs, as such, had not formed a distinct social class, although, in case of success, they or their descendants had risen into the capitalist class. They had come from all classes which had existed at the time of their emergence: working class, peasant class, farming class, artisan class, professional class, and aristocracy. They had been found among heads of firms. Mostly they had been owners; generally they had been founders of firms who had

[1]Ibid., p. 77.

come from an industrial family.[1] They may or may not have been the inventor of the good or process which had been introduced. They may or may not have been the person who furnished the capital. It had been their leadership rather than their ownership which had mattered. Entrepreneurial activity had been a distinct function sui generis. Previous ownership of the required producers' goods, of assets that may have served as collateral, or of money had made it easier for them to become entrepreneurs. Successful entrepreneurship had led to a capitalist position for the entrepreneur, and normally for his descendants. In many cases successful entrepreneurs had very soon possessed the plant and other paraphernalia of a going concern.[2]

Risk-bearing had not been part of the entrepreneurial function although risk had entered into the pattern in which the entrepreneur had worked. The capitalist had borne the risk. The entrepreneur had done so only to the extent he had also been a capitalist. But as entrepreneur, he had lost other people's money. Neither mere stock-holding nor mere ownership had made him an entrepreneur.[3]

In the capitalist economy there had always been the possibility of new combinations of production functions

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[1]Ibid., p. 79.

[2]Ibid., p. 78.

[3]Ibid., p. 79.

(innovations) and there had always been some people (entrepreneurs) who had been willing and able to carry out the new combinations (enterprises). The entrepreneur either had founded a new firm, constructed a new plant, or ordered new equipment from existing firms. To do so, he had borrowed the required funds from a bank, had drawn on the balances accrued, and had handed checks to others who had furnished him goods and services. Thus, he had withdrawn the quantities of producers' goods he needed from the uses which they had served before. Then other entrepreneurs had followed, and still others in increasing numbers in the path of innovation.[1] Financial consequences had been felt all over the economic system in the following order:

> First, the entrepreneur had spent his deposits, creating balances which increased the volume of payments.
>
> Second, prices of factors of production had risen as had money incomes and the rate of interest. Costs had also risen against both existing firms and enterprises.
>
> Third, receipts had also risen, corresponding to the expenditures entrepreneurs had made on producers' goods. Labor had been employed at higher rates and thus had increased its receipts also, as had the receivers of all those increased payments.

The process had spread the effects of entrepreneurial activity over the entire economic system. Entrepreneurial

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[1] Ibid., p. 106.

expenditure had been the outstanding conductor of those effects.[1]

Similarly, when the first entrepreneur's plant had begun to operate, the productive consequences had been as follows:

> New commodities had flowed into the market and they had been bought at an appropriate price while the enterprise had continued to produce without changing its production function. During the lifetime of the plant and equipment which had been originally acquired for innovation, the entrepreneur's receipts had repaid the debt which had been incurred plus interest and had left a profit for the entrepreneur.[2]
>
> Other entrepreneurs had followed in the original entrepreneur's wake and had thus increased the total output of goods. These new commodities gradually had intruded into the economic world at a rate too great for smooth absorption.[3]

The first entrepreneur's output had not generally caused visible disturbances nor had it been sufficient to alter the complexion of the business situation as a whole. But as the process had gained momentum, its effects had grown and disequilibrium had begun to appear, and had forced a process of adaptation on existing firms. Some of them had expanded into new economic space which had been created by the new commodities or production methods of the original enterprise. Others had been stimulated by losses. Others

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[1] Ibid., p. 107.

[2] Ibid., p. 109.

[3] Ibid.

had contracted their operations. Still others had liquidated and died. Finally, some firms and industries had been forced to undergo the difficult and painful processes of modernization, rationalization, and reconstruction.[1]

As long as entrepreneurs had continued to emerge and pour their stream of expenditures into the system, all of those effects had been overcompensated.[2] Entrepreneurial activity characteristically had started off in a definite direction aimed at producing a given commodity or group of goods. Thus, its possibilities had been definitely limited. The results of innovation had acted on certain individual prices and therefore had set definite limits for further advances in that or in related directions. A point finally had been reached at which the new commodity had been produced at a minimum unit cost equal to the price at which it sold. Profits had been eliminated. The impulse of innovation had spent itself for the time being.[3]

Thus, entrepreneurial activity had upset the equilibrium of the economic system. The release of new products had brought matters to a head. Revision of the economic values of all elements of the system had become necessary. For a time this had meant fluctuations and

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[1]Ibid., p. 110.

[2]Ibid.

[3]Ibid., p. 111.

successive attempts at adaptation under changing temporary conditions. This had made it impossible to calculate costs and receipts satisfactorily. Hence the difficulty of planning new things and the risk of failure had been greatly increased. In order to carry out additional innovations, it had been necessary to wait until things settled down. This had been the same as it was before the previous cycle's innovations had started. Entrepreneurial risk of failure had been at a minimum in the previous neighborhood of equilibrium and had risen slowly as prosperity had developed. Entrepreneurial activity had stopped at a point at which that risk had been at a maximum because risk-bearing had not been a part of the entrepreneurial function. Therefore, along with new products streaming onto the market and with repayments of loans increasing in quantitative importance, entrepreneurial activity had tended to slacken, until it finally ceased entirely.[1] Repayment of bank loans by entrepreneurs which had annihilated balances had accentuated these effects. This process was called autodeflation. It had occurred without any initiative on the part of banks and would have occurred even if no one had ever gone bankrupt or had restricted operations, and if no bank had ever called or refused a loan.[2]

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[1] Ibid.

[2] Ibid., p. 112.

These phenomena had led to a new neighborhood of equilibrium in which innovative enterprise started over again. Thus, as soon as the entrepreneurial impulse ceased to act, the system had embarked on a struggle toward a new neighborhood of equilibrium. According to Schumpeter, barring external disturbances, the natural forces of the economic system would have landed the economic machine there eventually. This process had taken time and had displayed occillations and relapses, but the process had been the cause of all the irregular movements during which losses had appeared to be scattered at random over the whole capitalist economic life and could not be stopped until it had accomplished its tasks and in the order described above.[1]

As soon as it had come into existence, practically every enterprise had been threatened and put on the defensive. It had also threatened the existing structure of its industry or sector of the economy. It had also created unemployment somewhere or other. In the competitive industrial world there had always been an innovating sphere and an old guard. However, Schumpeter feared that the entrepreneurial function had declined and that the entrepreneur had been downgraded since the scope of his functions had been reduced by large-scale organization, bureaucratic practices, the growth of political rather than economic decision making in the

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[1]Ibid., p. 113.

economic world, governmental controls and regulation, and long-range planning.[1]

Business Cycles

If capitalist economic life had not been in a process of continuous internal change, business cycles would not have existed.[2] Under the impulse of entrepreneurial activity, the economic system had drawn away from a neighborhood of equilibrium, after which it had moved toward another equilibrium position. This scenario produced a sequence of events called business cycles.[3] The evolution of competitive capitalism, or progress as it had been called, had been essentially a process which moved in cycles and unstabilized the economic world, although public opinion had assumed that "Progress"

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[1]Daniel R. Fusfield, Economics (Lexington, MA: D. C. Heath & Co., 1972), pp. 172-173: "He [Schumpeter] did not foresee the institutionalization of innovation in the research laboratory, the emergence of growth-minded and innovation-oriented business firms, or the innovative effects of government research and spending programs. The individual entrepreneur may be a vanishing social type but the functions he performed in a largely individualistic society seem to have been taken over by large organizations in a more bureaucratic world. . . . These studies [of innovation] take some of the gloss off of Schumpeter's entrepreneur, but they do not change the fundamental proposition: innovation and entrepreneurial function, however they may be carried out and by whom, are vitally important to a growing economy."

The Apollo Program of the 1960s which sent man to the moon can be cited as an example. Billions in public funds were invested in the innovations and the work of 20,000 companies and 100 universities.

[2]Schumpeter, Business Cycles, 1964, p. 115.

[3]Ibid., p. 114.

was naturally smooth and that fluctuations were something else and harmful to progess. Innovations had been the dominant element which had accounted for the historical and statistical phenomena called business cycles and had produced alternations of prosperities and recessions.[1]

Schumpeter's model hypothesized multiple cycles which operated simultaneously, rather than a single wave. For the purposes of his analysis he settled on a trilogy: (1) the long-wave of Kondratieff which was between fifty and sixty years in length, (2) the intermediate Juglar, eight to ten years long, and (3) the short 40month Kitchin, all of which had been the subject of historical and statistical investigation. In statistical time series the Kondratieff had formed the trend about which the Juglars had fluctuated and the Kitchins had fluctuated about the trends which the Juglars had set. Theoretically and historically, there had been six Juglars in each Kondratieff and three Kitchins in each Juglar.[2] Figure 1 portrays the notion.[3]

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[1]Ibid., p. 115.

[2]Clemence and Doody, ibid., p. 21.

[3]Schumpeter, Business Cycles, 1964, p. 434.

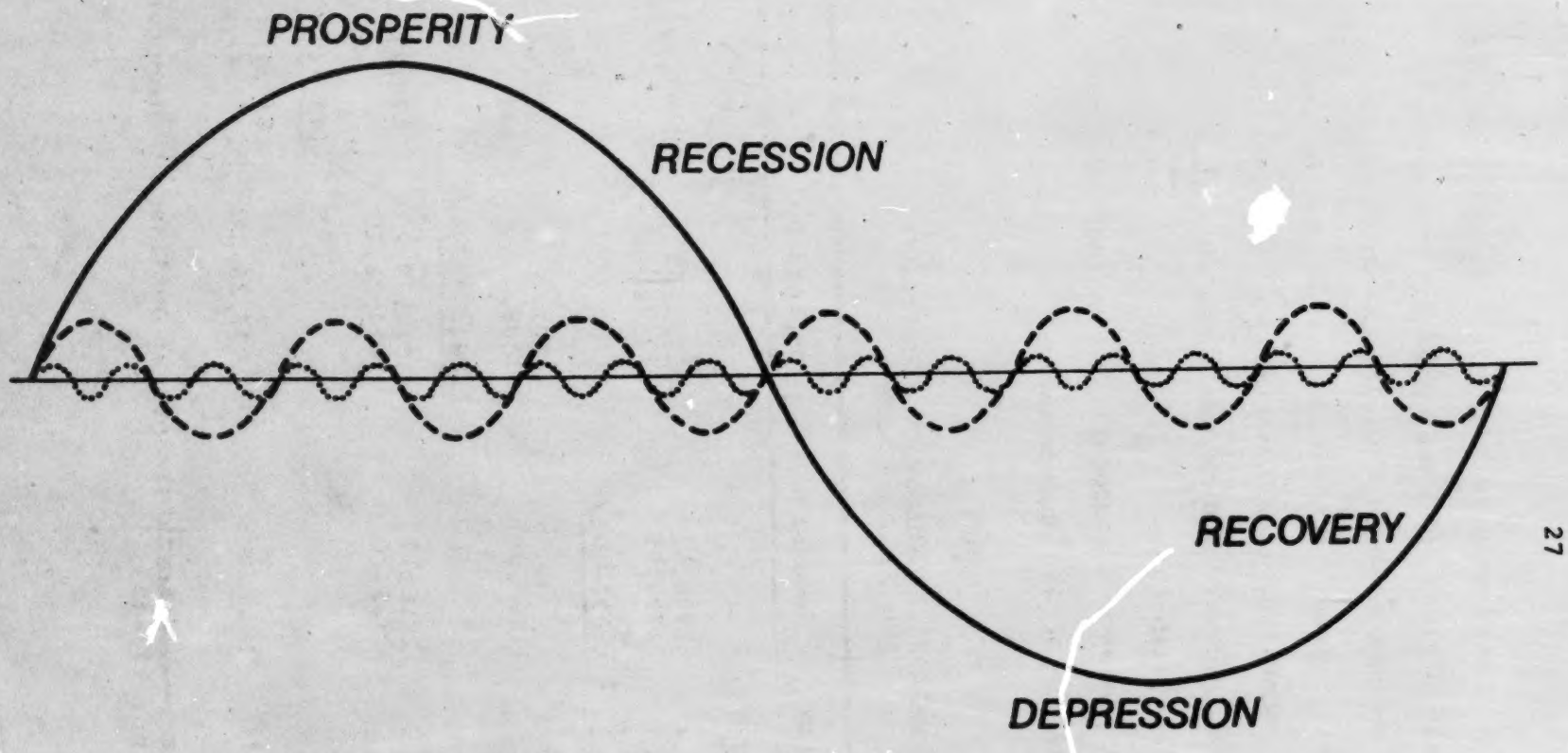

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Figure 1. Schumpeter's Trilogy of Cycles

These two broad aspects of prosperity and recession of the cycle were divided into four phases. The cycle started from a neighborhood of equilibrium which had preceded a prosperity phase; it moved away from that neighborhood and on to recession, then sometimes on to depression, and finally on to recovery and revival, ending with a new neighborhood of equilibrium.

Table 1 presents Schumpeter's chronology of Kondratieff cycles and the Juglar phases therein.

TABLE 1

SCHUMPETER'S CHRONOLOGY OF KONDRATIEFF AND JUGLAR PHASES[a]

Cycle	Prosperity	Recession	Depression	Recovery
Kondratieff I	1787-1801			
Juglar 1	1787,88,89	1790,91	1792,93	1793,94
Juglar 2	1795,96	1797,98	1799,1800,01	
		1802-1813		
Juglar 2			1802	1803,04
Juglar 3	1805,06	1807,08	1809,10	1811,12,13
			1814-1829	
Juglar 4	1814,15	1816,17	1818,19,20	1820,21,22
Juglar 5	1823,24	1825,26	1827,28,29	
				1830-43
Juglar 5				1830,31
Juglar 6	1832,33,34	1835,36	1837,38,39	1840,41,42

[a]Abstracted from [illegible] Historical Outlines, Schumpeter, Business Cycles, 1964, pp. 177-423.

TABLE 1--Continued

Cycle	Prosperity	Recession	Depression	Recovery
Kondratieff II	1843-1857			
Juglar 1	1843,44,45	1845,46,47	1848	1849,50,51
Juglar 2	1852,53	1853,54,55,56	1856,57,58	
		1858-1869		
Juglar 2				1859,60
Juglar 3	1860.....Civil War.....			1867,68,69
			1870-1883	
Juglar 4	1870,71,72	1872,73	1874,75,76	1877,78,79
Juglar 5	1879,80,81	1881,82,83		
				1884-1897
Juglar 5			1883-84,85	1886,87,88
Juglar 6	1889,90,91	1891,92,93	1893,94,95	1895,96,97
Kondratieff III	1898-1913			
Juglar 1	1898,99,1900	1900,01,02	1903,04	1905,06,07,08
Juglar 2	1909	1910,11,12	1913	
		1913-1925		
Juglar 2			1914	1915,16
Juglar 3	1917,18,19	1919,20	1920,21,22	1922,23,24,25
			1925-1939	
Juglar 4	1925,26	1927,28,29	1930,31,32	1933,34,35
Juglar 5	1935,36,37	1938,39		

Upswings had comprised the ending phase of one cycle, recovery, and the beginning phase of the next, prosperity; downturns were the middle two phases of a cycle, recession and depression. Each phase had been a complex phenomenon in itself, dominated by the forces which had produced its own characteristic set of features. The propelling forces in each phase had differed. During prosperities and depressions, the economic system had drawn away from equilibrium to disequilibrium. However, the nature of the deviations which had developed in each phase had differed. During recessions and recoveries the elements of the economic system which had asserted themselves had developed equilibrium relations. However, the nature of the deviations which had been liquidated or absorbed and the signs of the absorption which had appeared in each phase had differed.[1]

Upswings

Some of the causes of the rise had been in the revival phase: low stocks of goods and services, unused plans, unemployed labor, and idle credit facilities. Other causes had been in the prosperity: innovation had opened the prosperity phase, accompanied by easy money, low stocks of goods services, cheap labor, and raw materials.[2] Although prosperity had been commonly associated with social well being, in some cycles this had been very far from the case; the Civil War was

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[1]Ibid., pp. 132-133.

[2]Ibid., p. 116.

cited as an example. Times of innovation had been periods of effort and sacrifice and of work for the future. The harvest had come later.[1] The prosperity had been a "factor-using period of gestation."[2]

Unemployment and underemployment had been two of the imbalances which had occurred as a result of innovating enterprises which had come into production during the prosperity phase of the process. While enterprises had created demand for additional employees, old firms which had been competed-down or out of existence had released workers onto the labor market. Since enterprises may not have been located where the laid-off employees were and since some of the newly unemployed had not moved to the new locations of the enterprises, these disequilibria had resulted.[3]

Each neighborhood of equilibrium had contained undigested elements of earlier prosperities and depressions, which included innovations which had not been completely worked out as well as the results of faulty and imperfect adaptations.[4]

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[1]Ibid., p. 19.

[2]Oscar Lange, "A Note on Innovations," The Review of Economic Statistics (November 1941), p. 23.

[3]Schumpeter, Business Cycles, 1964, p. 82.

[4]Ibid., p. 133.

Organizational innovations had created new firms and built new factories. Technological innovations had been responsible for new commodities as well as new methods of production of old ones. When innovations had been embodied in new plant and equipment, additional consumer spending had resulted, practically as quickly as additional producers' spending had occurred. Together they had spread from the points in the system on which they had first impinged and had created that complex of business situations called prosperity.

Credit creation for innovation had also spread throughout the economic system. Thus, the effect of innovation had been to open up new investment opportunities to industries which had not yet reformed their method of production. In addition, new economic space had been created by the mere fact that additional production had called for other production to pay for it. These achievements had been initiated in prosperity and had matured more fully during the following recession, depression, and recovery.

Downgrades

The output-increasing period of operation of the innovation had occurred during the cycle's recession. Thus, besides being the time for harvesting the results of preceding innovation, recession had been the time for reaping innovation's indirect effects. That was when the new methods

of production had been copied and improved. Adaptation to commodities or to the impact of new goods had consisted in part of induced inventions. Some industries had expanded into new investment opportunities which had been created by the achievements of entrepreneurs. Under pressure, other firms had responded by rationalizing their technological and commercial processes. Much dead wood had disappeared. It was said that there had been "more brain in business" during recession than there had been during prosperity.[1]

Recession's task had been to undertake the economic system's housecleaning chores. Existing ("old") firms that could had adapted themselves and innovated. Others which could not had died. Normally, during recession the process of liquidation and absorption had stopped when it had done its work. Entrepreneurial activity then had resumed without external stimulus as long as the capitalist machine had been undamaged. However, if the housecleaning had not been completed and if there had been sufficient panic to stimulate reckless behavior, especially in the financial arena, the recession had turned into depression.[2]

Although recession had commonly been linked with errors of judgement, excesses, and misconduct, errors had

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[1]Ibid., p. 119.

[2]Ibid., p. 131.

occurred during both upswings and downturns. According to Schumpeter, it had not been error, but only a cluster or thronging of errors which could have possibly accounted for widespread depression. The element of error had had its place in all phases of the economic process. Situations had occurred in which mistakes of all sorts had been more frequent than usual.

Depression and the "Vicious Spiral."--Schumpeter believed that depression was not necessarily a part of the cyclical process and that when it happened it was a pathological occurrence.[1] However, depression had easily developed from business situations which had been normal in recessions. The cyclical process was logically complete without depression. Theoretically it had no organic function to perform. Its occurrence had depended on accidental circumstances: such as the acumen and temperament of the business community and the public, the presence of get-rich-quick morals, the way credit had been handled in prosperity, the ability of the public to have formed opinions about the merits of propositions, the degree to which belief in the continuance of prosperity had existed, the "wonders of monetary management," and the like.[2] If the recession had not eliminated many maladjustments and

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[1] Ibid., p. 131.

[2] Ibid.

rigidities in the economic system, much reorganization and adaptation had been accomplished during depressions.

Deep depression had had a way of feeding on itself and setting up a process that ran on indefinitely under its own steam.[1] Schumpeter called this process the Vicious Spiral.[2] The spiral process was a movement away from a neighborhood of equilibrium. It had generally occurred at the beginning of a depression. The depression had generally outlasted the spiral. The Vicious Spiral had been identified by the fact that any fall in values which had enforced liquidation had quite mechanically induced another fall in values. Two types of defensive action had been taken to counteract the spiral: firms and households had tried to repay loans and banks had called loans in order to improve their own liquidity. These efforts had driven debtors toward the very rocks which those measures had tried to avoid. Freezing of credits, shrinkage of deposits, and all the rest had followed in due course. Then it had become clear just how much there had been in the system to liquidate. Some persons had even become hysterical about the subject. Revival had occurred from the trough in which the business situation had no longer been dominated by a cumulative downward process. Recovery

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[1]Ibid., p. 127.

[2]Ibid.

had naturally followed when the depressive process had stopped. The system had recovered of itself under almost any practically conceivable circumstances in the absence of an exceptionally unfavorable external factor.[1]

Although commonly associated with wretchedness, times of prolonged depression had been very far from being tantamount to misery, the improvement in the standard of living of the working class from 1873 to 1879 was cited. The harvest of innovation had been reaped, however, with more anxiety than rejoicing.[2]

Credit Creation

In the private property economy innovations had been carried out by means of borrowed money. This had required the creation of credit. Entrepreneurs had borrowed the "funds" they needed for creating and operating their plants. Credit creation by banks, which had issued bank notes and created balances, had been the monetary complement of innovation. Carrying into effect an innovation had involved a shift of existing factors of production from old to new uses. The means required for carrying out the new production functions had to be withdrawn and directed into new channels. Since these were privately owned, they

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[1]Ibid., p. 131.

[2]Ibid., pp. 118-119.

had to be bought in their respective markets. The issue of new means of payment to entrepreneurs had thereby authorized this change and the setting up of the means of production. The shifting of production factors had been undertaken not by the withdrawal of funds from the existing firms but by the reduction of the purchasing power of existing funds which had been left with the old firms, while the newly created funds had been put at the disposal of entrepreneurs. The function of approving or of withholding assent to new innovations and new production functions had been filled by banks which had financed entrepreneurs. From the financing of innovation, credit creation had spread throughout the economic system. On the surface it appeared that credit creation had become the instrument for financing in general and had lost its relationship to the financing of innovation. However, the credit machine had been designed to serve the improvement of the productive apparatus and to punish every other use.

Schumpeter severely criticized banks and bankers for having failed historically to be "up to the mark."[1] This had interfered with the working of the capitalist system. That is, traditions and standards had been absent to such a degree that practically anyone, however lacking in aptitude or training, had drifted into banking, had found customers,

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[1]Ibid., p. 91.

and had dealt with them according to his own ideas. Thus, wildcat and reckless banking had occurred.[1] In itself it had been sufficient to turn the history of capitalist evolution into a history of catastrophies. The banking community had failed to function in the way which the structure of the capitalist machine required. Such failures had shown up primarily in dealing with novel propositions, such as innovations, where judgement had been most difficult and temptation strongest. Thus an association had developed between financing innovation and miscarriage and misconduct.

The Secondary Wave

In completing the description of the capitalist evolutionary cyclical process, Schumpeter inserted the notion of the existence of a secondary wave which occurred simultaneously along with the primary wave which carried it. The secondary pattern included those manifestations which occurred as reactions to the primary pattern as well as speculative activities which had been induced by it and their consequences.

Under the heady atmosphere of innovation and prosperity, direct and indirect effects caused by excessive optimism and pessimism, anticipation, speculation, and presuppositions had been get-rich-quick and windfall profit schemes in land and stock speculation, wildcat and "reckless" banking, and borrowing

[1]In 1977 the Georgia banker Bert Lance affair might be said to be a contemporary example.

for consumer consumption rather than for production.[1] Consequently errors and excesses had been inherent in the secondary process. A number of examples of such errors were cited.[2]

> Investment with the expectation of ordinary profits from productive enterprise was appropriate, but expectation of excessive profits on investment in non-innovative firms was not.
>
> Once prosperity had begun, it was a mistake for households to borrow for the purpose of consumption with the expectation that their actual incomes would be permanently what they were then or that they would increase.
>
> It was wrong for businesses to borrow to expand old lines on the expectations that the demand for the old would persist or increase. Rather they should borrow to initiate innovations.
>
> It was an error for farms to be bought at prices at which they could profit only if the prices of agricultural products kept their level or increased.

In all such cases, there would be no increase in productivity at all. This fact, in Schumpeter's view, had been responsible for a fall in prices which had sometimes spelled disaster, and which had never failed to add to the structure of debt. Debt incurred for unproductive, and thereby secondary, purposes had been one of the effects of the secondary process. In order to prevent economic disaster, it was necessary to distinguish between debts according to purpose since, as noted above, the credit machine was so designed as to serve

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[1] Schumpeter, Business Cycles, 1964, p. 122.

[2] Ibid., p. 123.

improvement of the productive apparatus and to punish any other use.[1]

Secondary wave phenomena had been superimposed on those of the primary process, whether the wave had been long, short, or intermediate in length. Since secondary procers manifestations had covered a wider surface than primary wave manifestations and since they had been generally more important quantitatively, they had often been more noticeable. They had also been easier to observe since they had struck the eye first. Sometimes primary wave phenomena had been hidden behind and sometimes entirely overlaid by secondary process phenomena. In some cases, manifestations of the secondary pattern had been all most people had seen.

The secondary wave had produced a number of other effects:

> Since prosperity had induced a period of liquidation, as the contours of the new neighborhood of equilibrium had emerged, manifestations of the secondary process had shown that there was much more to liquidate and adjust.
>
> In the climate of prosperity, reckless, fraudulent, and otherwise unsuccessful businesses had developed which could not stand the test administered by recession.
>
> The speculative position of the secondary process contained many untenable elements which had been brought down by the slightest impairment of the values of collateral. Current as well as investment operations had shown loss as soon as prices had fallen. Part of the debt structure had crumbled.

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[1]Ibid., p. 123.

While all these effects had not necessarily amounted to panic or crisis, they had easily induced panics and crises. When they had occurred, additional adjustments had become necessary, and the economic system had slipped toward the Vicious Spiral and the beginnings of depression.

Schumpeter analyzed more than fifty major and minor cyclical industries, giving particular attention to those which had been carrying mechanisms of one or more Kondratieffs; among them were:[1]

Agriculture	Chemicals	Communication	Construction
Cotton	Coal tar	Printing	Bridges
Food processing	Glass	Telegraph	Pipe lines
Lumber	Paper	Telephone	Public buildings
Wheat ~~Weed~~	Rubber	Typewriter	Railroads
Wool	Vulcanization		Residential
			Shipbuilding
			Utilities

Electrical	Energy	Finance	Machinery
Appliances	Coal	Banking	Agricultural
Distribution	Coal gas		Tool and die
Electrification	Cotton seed oil		
Production of electricity	Natural gas		
	Petroleum		
	Steam power		
	Water power		

Metals	Textiles	Transportation
Aluminum	Boots & shoes	Automobiles
Copper	Cotton	Canals
Iron	Rayon	Commercial Aviation
Mining	Silk	Railroads
Scrap	Wool	Shipping
Smelting		Traction
Steel		

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[1] See Historical Outlines, Schumpeter, Business Cycles, 1964, pp. 177-423.

The first Kondratieff encompasses, in Schumpeter's view, the first industrial revolution. The introduction of power machinery was its main innovation. Water power development, together with improvements in communications, such as turnpikes, canals, and shipbuilding, made up the backbone of the industrial aspects of its prosperity phase. During the second Kondratieff, also the second industrial revolution, the "railroadization" of America was the outstanding feature. Finally, during the third Kondratieff, which was the third industrial revolution as well, electricity and petroleum provided the major carrying mechanisms. Important technological and organizational innovations in each industry were described. Tables 2 and 3 supply examples of the analysis with two of the earliest American industries, metals and textiles.

TABLE 2

CYCLICAL CHRONOLOGY OF IRON AND STEEL INDUSTRIES

Narrative	Pre-Kon.	KONDRATIEFF I[a]				KONDRATIEFF II[b]				KONDRATIEFF III			
		Pro.	Rec.	Dep.	Rev.	Pro.	Rec.	Dep.	Rev.	Pro.	Rec.	Dep.	Rev.
	1607	1787	1802	1914	1930	1843	1858	1870	1934	1898	1913	1925	1940
	1786	1801	1813	1829	1843	1857	1869	1883	1897	1913	1925	1939	1954
Iron works operated.	1640												
Industry in general and milling in particular expanded		1790s											
Industry outgrew small-scale and old methods.			xxxxxxxx										
Industry, drawn along by foreign innovation and increasing home demand, expanded to the general march of things.			xxxxxxxx										
Technological innovations in production:													
-Puddling process introduced				1817									
-Rolling mills became larger and began to crowd out forge hammers				xxxx									
-Cast steel production before 1837					xxxx								
-Crucible steel-works output before 1837					xxxx								
Technological innovations in mining: (Mesabi range)							xxxxxxxx						
-in exploration and development of mining districts prior to mining opms.													
-in transportation.													
-in new commercial operations.													
The industry migrated from NE, NY, & PA. to Central West & South (Ala., Tenn.). Thus, the competing-down process was geographical. Also, the rapid shifting of iron production centers caused a large percentage of idle furnaces in NE, NY, and PA.							xxxxxxxx						
Organizational innovations linked corporate shipping and railroad interests and vertical combinations arose by the intrusion of steel firms.							xxxxxxxx						

TABLE 2--Continued

Narrative	Pre-Kon.	KONDRATIEFF I				KONDRATIEFF II[b]				KONDRATIEFF III[c]			
		Pro.	Rec.	Dep.	Rev.	Pro.	Rec.	Dep.	Rev.	Pro.	Rec.	Dep.	Rev.
	1607	1787	1802	1814	1830	1843	1858	1870	1884	1898	1913	1925	1940
	1786	1801	1813	1829	1843	1857	1869	1883	1897	1913	1925	1939	1954
Technological obsolescence increased rapidly: -charcoal furnaces had to go. -bituminous furnaces adapted European improvements and grew in size and efficiency.								xxxxxxxx					
Output increased from 1 mil. to 9 mil. tons								1870-1890					
Up-to-date firms produced at a price which fell, with fluctuations; thus, attempts to limit output by agreement failed.								1872-1897					
Changes in production functions in iron, steel and metallurgy were made in connection with chemistry and electricity.											1919-1929		
The career of light alloys is an example which had its first stage in											1920s		
Material saving increased: scrap was used increasingly in steel making, copper, aluminum, et al. This was a typical downgrade development which exerted a depressing influence on production of a number of important raw materials outside the metal field. This was a distinct innovation as well as a distinct industrial problem. Prices of scrap were more sensitive to the course of cyclical phases than any other commodity prices; the relation between scrap and pig-iron prices was a good index, even forecaster, of business situations.													

TABLE 2--Continued

Narrative	Pre-Kon.	KONDRATIEFF I			KONDRATIEFF II				KONDRATIEFF III [c]			
		Pro.	Rec.	Dep.	Rev.	Pro.	Rec.	Dep.	Rev.	Pro.	Rec.	Dep.	Rev.
	1607	1787	1802	1814	1830	1843	1858	1870	1884	1898	1913	1925	1940
	1786	1801	1813	1829	1843	1857	1869	1883	1897	1913	1925	1939	1954
Other technological and organizational changes: -continuous rolling -crowding out of merchant furnaces. -many improvements of the rationalization kind in individual lines of firms.											xxxxxxxx		
The steel industry suffered in depression especially and prospered in booms in consequence of the general business situation, rather than in consequences of its own enterprise. The behavior of its prices accorded with this impression. Steel consumption increased strongly and steel increasingly became a consumers' good. The conquest of new uses had more than offset the steel-saving rationalizations which had occurred.											1920-1921		

[a] Schumpeter, Business Cycles, 1964, pp. 193, 235-238.

[b] Ibid., pp. 268-270.

[c] Ibid., p. 317.

TABLE 3

CYCLICAL CHRONOLGY OF TEXTILE INDUSTRIES: COTTON AND WOOL

Narrative	Pre-Kon.	KONDRATIEFF I[a]				KONDRATIEFF II[d]				KONDRATIEFF III			
		Pro.	Rec.	Dep.	Rev.	Pro.	Rec.	Dep.	Rev.	Pro.	Rec.	Dep.	Rev.
	1607	1787	1802	1814	1830	1843	1858	1870	1884	1898	1913	1925	1940
	1786	1801	1813	1829	1843	1857	1869	1883	1897	1913	1925	1939	1954
Rise of political influence of textiles.	xxxx												
N.E. and Pa. mills developed by		1789											
English technological innovations[b] introduced about		1790											
Whitney cotton gin introduced.		1792											
Water-power use introduced.		xxxx											
Other domestic technological developments:													
-Pickers and willows,			1807										
-High pressure engines,			1810										
-The Lowell loom				1814									
-The Goulding condenser				1826									
Accordingly, quantities of produces rose and prices declined.			xxxxxxxxx										
Incorporation of new manuf'g firms.[c]			1807-1818										
The industries expanded into new economic space, and induced development brought about by previous innovations which brought new regions into cultivation. Great investment in southern cotton planting began. Planting improved technologically. (Phenomena which had played a role in all agricultural depressions in the USA.)			xxxxxxxxx										
The industries expanded greatly after				1820	xxxxxxxxx								
Cotton production rose due to world demand. The good cotton crop of was sold at prices which gave impetus to all sorts of activities which added to the difficulties of liquidation.						1855							
Cotton-seed oil industry's innovating stage began in late							1860s						
and early								1870s					

TABLE 3-Continued

Narrative	Pre-Kon.	KONDRATIEFF I[a] Pro.	Rec.	Dep.	Rev.	KONDRATIEFF II[d] Pro.	Rec.	Dep.	Rev.	KONDRATIEFF III Pro.	Rec.	Dep.	Rev.
	1607	1787	1802	1914	1830	1843	1858	1870	1884	1898	1913	1925	1940
	1786	1801	1813	1829	1843	1857	1869	1883	1897	1913	1925	1939	1954
Organizational innovation of the establishment of American Cotton Oil Trust and the many-plant concern of the Southern Cotton Oil Co.									1884 1887				
Worsted was experimented with in the					1830s								
The worsted industry got in stride and was one of the major innovations during						1852-	1860						
The worsted industry expanded during							xxxxxxxxxxxxx						
During KII cotton and wool industries had some of the traits of an established industry which expanded with the environment, innovating moderately in the process: Cotton was propelled by developments in production of raw material; worsted was practically a new industry.													
Migration of the cotton industry to the South first became important in the								1880s					
Innovation in cottom came from machinery: Textile entrepreneurs had a larger share in the evolution of their machinery than had entrepreneurs in the shoe industry. They took a hand in producing it. While machinery development had begun at the start of the century,			xxxx										
it rose in importance in				xxxxxxxxx									
and continued on an increasing scale in					1840s								
Technological development in cotton lay between two American innovations: 1) Ring spinning was invented in				1828/31									
2) The Northrop battery loom was successful in									1894				

TABLE 3--Continued

Narrative	Pre-Kon.	KONDRATIEFF I			KONDRATIEFF II[d]				KONDRATIEFF III[e]			
		Pro.	Rec.	Dep.	Rev.	Pro.	Rec.	Dep.	Rev.	Pro.	Rec.	Dep.	Rev.
	1607	1787	1802	1914	1830	1843	1858	1870	1934	1898	1913	1925	1940
	1786	1801	1813	1829	1843	1857	1869	1883	1897	1913	1925	1939	1954
Standardization of firms was one of the major organizational innovations during								xxxxxxxx					
Also, inconspicuous innovations induced by the Kondratieff downgrade provided individual differences in production functions and different commercial combinations in firms.								xxxxxxxx					
Output expanded greatly and there were losses, failures and shutdowns, and complaints about overproduction.								xxxxxxxx					
Consequently, costs differed widely and the competing-down process ran strongly.								xxxxxxxx					
By the time of KIII, textiles had taken on the characteristics of an old established industry that was drawn along by the environment:										xxxxxxxx			
-Cotton consumption doubled during the period.													
-There were some technological innovations: The Northrop-Draper loom came into its own; the Crompton loom and the Knowles loom were new: ring spindles were improved and reduced cost; electricity lent its aid.									1905 1910				
-And the price of print cloth rose from 1900 to and above the level of the 1880s.													
-There were some organizational amalgamations, and an attempt to form a cartel.										1898- 1901			
-The feature in wool was the large worsted mill.													
-Silk made considerable headway but this was only continuation of what had been achieved before.													

TABLE 3--Continued

Narrative	Pre-Kon.	KONDRATIEFF I				KONDRATIEFF II				KONDRATIEFF III e			
		Pro.	Rec.	Dep.	Rev.	Pro.	Rec.	Dep.	Rev.	Pro.	Rec.	Dep.	Rev.
	1607	1787	1802	1814	1830	1843	1858	1870	1884	1898	1913	1925	1940
	1786	1801	1813	1829	1843	1857	1869	1883	1897	1913	1925	1939	1954
During the 1919-1929 period, the price of cotton moved fairly well with any all-commodity index; and domestic consumption of cotton also roughly with any index of industrial production.											1919-	1929	
Exports started below the pre-war average, rose sharply from 1921-1925, and declined to pre-war average from 1924-1929.											1919-	1929	
Rayon was only one of the competing commodities that exerted some influence.											1919-	1929	
There was migration to lands made available by new methods of cultivation (especially to Texas and Oklahoma), partly due to the tractor and mechanical picker, and innovation in ginning.											1919-	1929	
Consequently much Southeastern cotton farming was competitively annihilated.											1919-	1929	
Labor was drawn away from an "old" stratum toward Northeastern industry.											1919-	1929	
Farmer's prices of cotton rose as result of WWI; this was a normal development and did not induce increased acreage. The ravages of the boll weevil (1921-1923), however, raised the price to 32¢ and propelled the expansion of cotton growing in the West. Total domestic acreage increased by more than 50%, and foreign acreage by almost that much.											1919-	1929	

TABLE 3--Continued

Narrative	Pre-Kon.	KONDRATIEFF I				KONDRATIEFF II				KONDRATIEFF III			
		Pro.	Rec.	Dep.	Rev.	Pro.	Rec.	Dep.	Rev.	Pro.	Rec.	Dep.	Rev.
	1607	1787	1802	1814	1830	1843	1858	1870	1884	1898	1913	1925	1940
	1786	1801	1813	1829	1843	1857	1869	1883	1897	1913	1925	1939	1954
"Thus there developed slowly . . . an untenable situation which was bound to curtail the role of American cotton in the world and to explode into a major depression."[f]											1919-1929	1929-1935	
The federal government's depression cotton program, along with the Bankhead Act the Commodity Credit Corporation, "did for cotton what nature did for wheat."[g]													
-Curtailment of acreage was made more effective by roughly 25% of the 1933 cotton crop.													
-Annual prices to growers were nearly doubled from 1932 to 1934, which had been depressed by the government's holding of more than 3 million bales.													
-Without the program the 1933 crop would have been one of the largest on record.													
". . . the success of the policy in removing a major obstacle from the road of recovery and in reviving shriveled tissues in the economic organism is beyond reasonable doubt."[h]													

[a]Schumpeter, Business Cycles, 1964, pp. 188-194.

[b]Jennies, Arkwright frames, and mules.

[c]Ninety in Massachusetts alone.

[d]Ibid., pp. 211, 222, 234, 241-243.

[e]Ibid., pp. 268, 296-297, 316.

[f]Ibid., p. 297.

[g]Ibid., pp. 365-366.

[h]Ibid., p. 366.

APPENDIX

Bibliography of 28 Publications of J. A. Schumpeter Related to the Schumpeterian System Listed Chronologically[1]

1909 "On the Concept of Social Value," Quarterly Journal of Economics, February, pp. 213-232.

1923 "Unternehmer," Handwörterbuch der Staatswissenschaften, Vierte Auflagem VIII, Jena, Gustav Fischer, pp. 476-487.

1926 Theorie der wirtschlaftlichen Entwicklung, Leipsig: Duncker und Humblot, 2nd ed.

1927 "The Explanation of the Business Cycle," Economica, December, pp. 286-311.

1928 "The Instability of Capitalism," Economic Journal, September, pp. 361-386.

1930 "Mitchell's Business Cycles," Quarterly Journal of Economics, November, pp. 150-172.

1931 "The Present World Depression: A Tentative Diagnosis," American Economic Review, March, pp. 179-183.

1934 "The Nature and Necessity of a Price System," Economic Reconstruction, New York: Columbia University Press, pp. 170-176.

1934 "Robinsons's Economics of Imperfect Competition," Journal of Political Economy, April, pp. 249-257.

1934 "Depressions," The Economics of the Recovery Program, Ed. Brown, New York and London: Whittlesey House, McGraw-Hill, pp. 3-21.

1935 "A Theorist's Comment on the Current Business Cycle," Journal of the American Statistical Association, Supplement, pp. 167-168.

1935 "The Analysis of Economic Change," Review of Economic Statistics, May, pp. 2-10.

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[1]Richard V. Clemence and Francis S. Doody, The Schumpeterian System. Cambridge, MA: Addison-Wesley Press, Inc., 1950), pp. 110-111.

1936 The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle, Cambridge, MA: Harvard University Press.

1936 A Review of Keyne's General Theory, Journal of the American Statistical Association, December, pp. 791- 95.

1939 Business Cycles; A Theoretical, Historical, and Statistical Analysis of the Capitalist Process, New York and London: McGraw-Hill.

1941 "Alfred Marshall's Principles: A Semi-Centennial Appraisal," American Economic Review, June, pp. 236-248.

1943 "Capitalism in the Postwar World," Postwar Economic Problems, Ed. Harris, New York and London: McGraw-Hill, Chapt. VI, pp. 113-126.

1944 A Review of H. J. Laski's Reflections on the Revolution of Our Time, American Economic Review, March, pp. 161-164.

1946 A Review of Hayek's The Road to Serfdom, Journal of Political Economy, April, pp. 269-270.

1946 "The Decade of the Twenties," American Economic Review, May, pp. 1-10.

1946 "John Maynard Keynes: 1883-1946," American Economic Review, September, pp. 495-518.

1947 Capitalism, Socialism, and Democracy, New York: Harper and Brothers, Rev. ed.

1947 "Theoretical Problems of Economic Growth," Journal of Economic History, Supplement VII, pp. 1-9.

1947 "The Creative Response in Economic History," Journal of Economic History, November, pp. 149-159.

1949 "Economic Theory and Entrepreneurial History," Change and the Entrepreneur, Research Center in Entrepreneurial History, Harvard University, Cambridge, MA: Harvard University Press, pp. 63-84.

1949 "Science and Ideology," American Economic Review, March, pp. 345-359.

1949 "The Communist Manifesto in Sociology and Economics," Journal of Political Economy, June, pp. 199-212.

1949 "English Economists and the State-Managed Economy," Journal of Political Economy, October, pp. 371-372.